

New species of Isometopinae from South Africa (Hemiptera: Miridae)*

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INTRODUCTION

The Isometopinae represent an isolated subfamily of Miridae. Relationship with the Miridae has been generally recognized, but the presence of ocelli, the vertical head, the two-segmented tarsi, and the distinctive habitus of the isometopids have led many modern workers to treat them as worthy of familial status. Carayon (1958) in a carefully reasoned analysis has shown conclusively that not only do isometopids agree with other Miridae in most essential morphological features but also, as previously recognized, that they comprize a polyphyletic group. He removed the genera *Bilia* Distant, *Biliola* Carvalho and *Bilianella* Carvalho to the family Anthocoridae and concluded that the similarity of the habitus of members of these three genera to that of isometopids was due to convergence. We fully concur with Carayon's conclusions. To his extensive evidence of isometopid-mirid affinities can be added the asymmetrical parameres, and of particular importance the sclerotized areas of the female genitalia. Slater (1950) demonstrated in Miridae the presence of a pair of "sclerotized rings" on the dorsal wall of the bursa copulatrix and sclerotized plates on the posterior wall. Isometopids also possess such sclerotized rings (fig. 12), and the posterior wall has a pair of simple crescent-shaped sclerites (fig. 13). These structures are further evidence of the mirid-like characters of the isometopid line. The structure of the posterior wall indicates close relationship with the subfamily Phylinae, both taxa possessing simple plates in contrast to such highly derived subfamilies as the Mirinae and Orthotylinae where this area is often complex. Knight (1941) considers the Phylinae to be rather primitive mirids. The simple posterior wall and the presence of ocelli indicate that the Isometopinae, despite their highly modified heads and habitus, are probably relatively primitive forms. In such genera as *Isometopidea* Poppius the habitus itself is so "phyline" that were it not for the ocelli the species would certainly be placed in the Phylinae, and

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the Miridae can perhaps be considered to have been directly derived from an ancestral stock not unlike that represented by *Isometopidea*.

Due to the lack of material of these generally scarce and cryptic insects until recently there has been relatively little work accomplished on the Ethiopian fauna. McAtee and Malloch (1932) described *Isometopus peltatus* from the Sudan, *I. bicolor* from East Africa and *Pisca blattiformis* from the Cameroons. Hesse (1947) erected the genus *Letaba* for a new species (*bedfordi*) from the Transvaal. Carvalho (1951) synonymized *Letaba* with *Isometopus*, added *Paramyiomma hemialba* from the Cape (Mossel Bay) and *Lindbergioli aureopilosa* from Uganda. Hoberlandt (1952, 1959) described *Paramyiomma dundoensis*, *P. affinis*, *Lindbergioli jarmilae* and *Isometopus angolensis* from Angola and *Paramyiomma mulleri* from the Transvaal. Recently Smith (1967) has given a key to the Ethiopian genera, synonymized *Paramyiomma* with *Myiomma*, described an additional nine species of *Myiomma* from Ghana (*albicoxa*, *albiscutellata*, *fasciata*, *fulva*, *impunctata*, *nigra*, *rubra*, *rubrovenata*, *verticata*), erected a new genus *Magnocellus* to contain two additional Ghanaian species (*wacriensis* and *ghanaiensis*), resurrected *Letaba* from synonymy, and described a Ghanaian species of *Letaba* (*nitida*).

Thus the Ethiopian fauna to date contains five described genera and twenty-three species. In the present paper we describe three new species of *Magnocellus* (two from South Africa and one from the Congo), two new species of *Letaba*, a new species of *Myiomma*, and a new species of *Isometopidea* (a genus hitherto known only from the Oriental region)—all from South Africa. This brings the known Ethiopian isometopid fauna to six genera and thirty species. That these must represent a mere fragment of the actual fauna seems clearly evidenced by Smith's description of twelve new species from one station (Tafo) in Ghana.

We retain some reservations concerning the status of such genera as *Letaba* and *Magnocellus* where discrimination is based largely upon ocellar size and spacing. These characters appear to us to be more variable than is indicated in the literature. Our preliminary survey suggests that characters in the male and female genital apparatus are likely to prove to be of greater value in the delineation of generic taxa than are such characters as the size and position of the ocelli.

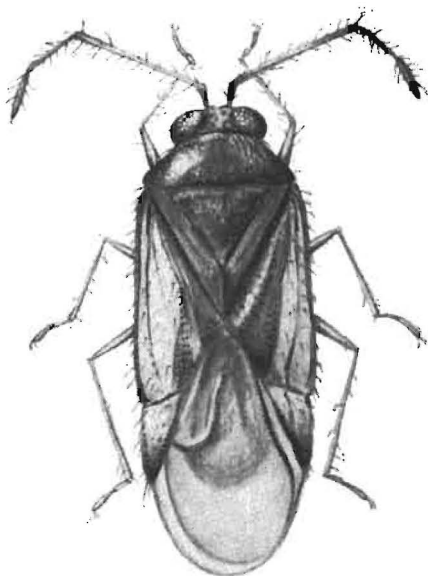
The photomicrographs of the male and female genital structures were done with a compound microscope. Mounts were with glycerine to provide ease of orientation. Views of the male claspers are in a dorsal aspect in the position of repose in the genital capsule (except for figs. 8 and 10 which are ventral views) and with the blade pointing up in the case of the left claspers. We have designated the median swollen area in the left clasper as the "sub-basal swelling". Fig. 11 shows the position of the claspers in repose in the genital capsule.

Isometopidea miriformis spec. nov., figs 1, 4-5

Body relatively elongate, nearly parallel-sided, not strongly ovate; total length 2.80 mm, maximum width 1.08 mm; head dull ochraceous dorsally across vertex, becoming dark brown below eyes and extending mesad nearly to ocelli; pronotum and scutellum dark chocolate brown to black with extreme apex of scutellum yellow; pronotal basalar plate ochraceous, strongly contrasting with black coloration of pronotum; entire hemelytra nearly uniformly smoky gray-brown, inner $\frac{1}{2}$ of corium darker brown than translucent lateral $\frac{1}{2}$; fore and middle coxae, trochanters and femora pale testaceous, tibiae strongly contrasting dark chocolate brown to black, hind femora dark chocolate brown, becoming dull ochraceous at apex, hind tibiae dark chocolate brown

on basal $\frac{3}{4}$, distal $\frac{1}{4}$ pale testaceous; antennae nearly uniformly dark brown; clothed thickly above with decumbent sericeous hairs.*

Head vertically declivent, eyes well separated mesally, not perceptibly raised above surface of vertex; ocelli large, in contact with mesal margin of compound eye, separated from one another by slightly less than width of an ocellus; antennae inserted well below ventral margin of eye; occipital area of head distinct behind compound eye, bearing a series of stout upright hairs, median head length (frontal view) 0.50 mm, width 0.54 mm; interocular space 0.12 mm, width ocellus 0.04 mm, interocellar space 0.03 mm; pronotum relatively short and broad, subcampanulate, lateral margins



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Fig. 1. *Isometopidea miriformis* spec. nov.

sinuate, area of calli not prominently differentiated, length pronotum 0.32 mm, width 0.84 mm; scutellum prominently convex, length scutellum 0.38 mm, width 0.40 mm; clavus somewhat broadened from base to claval commissure, corium with embolium relatively narrow, lateral margin slightly convex, cuneal fracture very deep, cuneus large and triangular, membrane exceeding apex of abdomen, distance apex clavus—apex corium 0.86 mm, apex corium—apex membrane 0.50 mm; fore and middle legs slender, hind femora moderately incrassate; antennae with first segment very short, segment 2 elongate and robust, densely clothed with semi-decumbent hairs as long as or nearly as long as diameter of segment, segments 3 and 4 extremely slender with hairs

* When these hairs are observed with the specimen directed with the caudal end toward the light source the hairs appear uniformly black.

much longer than diameter of segments, length antennal segments I 0.12 mm, II 0.92 mm, III 0.24 mm, IV 0.20 mm; labium extending beyond metacoxae, length labial segments I 0.26 mm, II 0.30 mm, III 0.28 mm, IV 0.34 mm.

Left clasper (fig. 4) with sub-basal swelling irregular, four elongate hairs arising from the "outer surface" when viewed in position of repose, distal portion of shaft twisted and evenly curved, terminating in an elongate acute apex; right clasper (fig. 5) finger-like, nearly straight, slightly twisted, tapering unevenly to an acute apex.

**2**

Fig. 2. *Magnocellus transvaalensis* spec. nov.

MATERIAL EXAMINED. Holotype: ♂ SOUTH AFRICA: Cape Province, just W. of Knysna, Feb. 8, 1968 (T. Schuh, J. A. & S. Slater, M. Sweet); in National Collection of Insects, Pretoria. Paratype: 1♂, same data as holotype; in J. A. Slater collection.

We are assigning this species to the genus *Isometopidea* Poppius (described from a single female from Ceylon) with some reservations. The present species agrees with *Isometopidea lieweni* in general body shape, the presence of a large basal and a small distal cell in the membrane, a similarly shaped embolium and clavus, a biconcave posterior pronotal margin, ocelli in contact with the mesal margin of the compound eye and slightly more separated from one another than their own width, a sulcate longitudinal

groove on the clypeus, decumbent vestiture, the extremely vertical head and unarched vertex, labium reaching at least to the tip of the hind coxae, pronotum wider than long, a thickened hind femur and apparently similar antennae. *I. miriformis* differs from *lieweni*, judging from the description, primarily in the shape of the eyes and the insertion of the antennae relative to the eyes. Poppius (1913) described the eye of *lieweni* as being broadly truncated ventrally with the antennae articulated somewhat below the broadest point of the eyes. In *miriformis*, however, the eye tapers to a bluntly rounded point ventrally and the antennae are inserted well below the ventral margin of the eye. Furthermore, the second segment of the antennae is, if anything, thicker than the first, not the reverse as indicated for *lieweni*. The posterior margin of the pronotum lacks a distinct caudally directed point as the meson in *miriformis* and the scutellum is evenly convex, lacking a median concavity as indicated for *lieweni*. The coloration of the two species is quite different, the present species being black on the pronotum and scutellum with a smoky gray hemelytron whereas in *lieweni* it is indicated that the pronotum is broadly yellow, the membrane black, the venter yellow, the anterior pleura yellow anteriorly, and the antennae and legs bright yellow.

There is an additional male from the Cape Province, 4 miles west of Gydo Pass summit, north of Ceres, January 26, 1968 (*T. Schuh, J. A. & S. Slater, M. Sweet*) which appears to agree with the type in all essential respects but is a very teneral specimen and in poor condition.

We also have before us three females which may or may not pertain to this species. A strongly brachypterous female from 2 miles south of Goukamma, February 8, 1968 (*Slaters, Schuh, & Sweet*) probably represents the female sex of *miriformis*. This specimen is highly brachypterous and strongly ovate in shape with the embolium strongly arcuate, the cuneal fracture absent or very obscurely indicated, the membranes remaining as small flaps overlapping one another mesad and not extending posteriorly beyond the posterior angle of the corium. The wing leaves the posterior two to three abdominal segments exposed. The clypeal groove is absent or very weakly indicated in these females, but the general shape of the eyes, size and position of the ocelli, antennal insertion, condition of the legs and length of antennae are similar. The second antennal segment is much less robust than in the male, but this is a common sexual dimorphic feature in the Isometopinae. The labium is very elongate, extending caudally over much of the abdomen. The hind femora are strongly swollen, much more so than in the male. The type of vestiture and the general shape of the pronotum and scutellum is similar to that found in the male described above.

There is a similarly brachypterous female from Natal, Giant's Castle Park, 5,800', March 6, 1968 (*Schuh, Slaters & Sweet*) which may well represent a distinct species. This specimen differs from the Goukamma female in having much more prominent, elongate, thickly placed, woolly vestiture, the embolium bright yellow, strongly contrasting with the dark chocolate brown corium, the first two antennal segments light yellow, and, most remarkably, it appears to completely lack ocelli. This last feature is noteworthy when one remembers that Isometopinae were for a long time considered a family distinct from the Miridae on the basis of the presence of ocelli. Here we apparently have a secondary independent loss of the condition associated with brachyptery. This Giant's Castle specimen shows an even more striking modification of the hemelytra in that the membrane is reduced to a very tiny rim along the inner apical margin of the corium, and each clavus and corium is indistinguishably fused into a single hemelytron which meets at the middle nearly at the end of the abdomen. In contrast, the Goukamma specimen is less highly modified. The clavus and the corium are distinct,

and the claval commissure extends only slightly beyond the middle of the abdomen, leaving a long apical corial margin. We feel that the Natal specimen will prove to represent a distinct species, but deem it unwise to describe it from a single female at this time.

There is an additional female in very poor condition, lacking antennae and legs, from Cape Province, just north of Outeniqua Pass summit, February 7, 1968 (Schuh, Slaters & Sweet) which closely resembles the Goukamma female, in possessing a distinct clavus and corium, similar reduction of the membrane, similar vestiture and a light spot at the apex of the scutellum. The association of males with these rather anomalous females will be highly desirable.

Unfortunately we have little or no biological information on these insects which were taken on the ground adjacent to grass clumps and seed litter in association with rhyparochromine lygaeids.

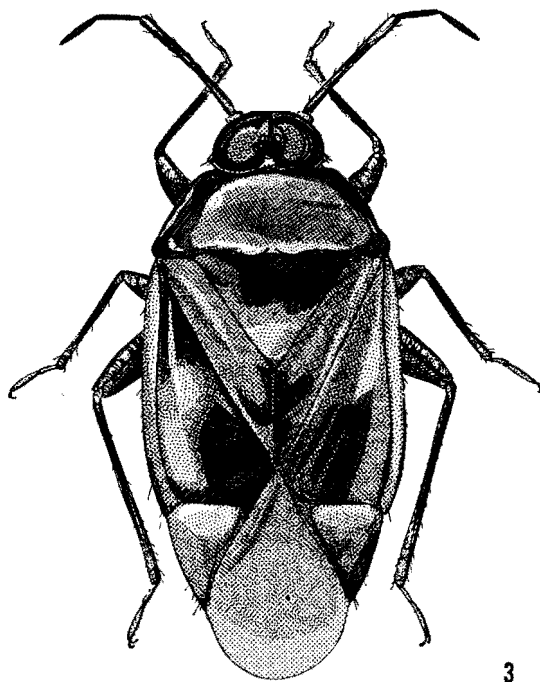


Fig. 3. *Myiomma capeneri* spec. nov.

***Magnocellus turneri* spec. nov., figs 6-7**

Ovate, total length 2.92 mm, maximum width 1.80 mm; general coloration rich brown, becoming pale translucent on explanate pronotal and corial margins and over most of cuneus with exception of small area along caudomesal margin; membrane transparent, slightly smoky; posterior $\frac{1}{4}$ of scutellum white, head yellowish brown,

white behind eyes dorsally and laterally; first antennal segment dark brown, segments 2, 3, and 4 uniformly pale yellowish-brown, legs brown, becoming pale testaceous to white on trochanters, base and apex of femora and distal $\frac{1}{2}$ of tibiae; dorsal surface conspicuously punctate, clothed above with dense elongate semi-decumbent yellowish hairs; antennal segment 2 with thick semi-decumbent hairs not longer than diameter of segment, hairs on segments 3 and 4 as long as or longer than diameter of segment; membrane thickly covered with fine pale hairs.

Head somewhat excavated below eyes, impressed transversely adjacent to ventral margin of frons (frontal view), eyes widely separated mesally, ocelli large, width more than $\frac{1}{2}$ interocellar space, eyes emarginate at caudomesal angles, not attaining posterior margin of head dorsally or laterally, length head 0.18 mm, width across eyes 0.70 mm, interocular space 0.18 mm, width ocellus 0.06 mm, interocellar distance 0.05 mm; pronotum prominently convex, lateral margins arcuate and strongly explanate, length pronotum 0.46 mm, width pronotum 1.38 mm; scutellum convex, length scutellum 0.70 mm, width scutellum 0.76 mm; corium translucent, lateral margins strongly explanate and arcuate, clavus strongly narrowing caudally, distance apex clavus—apex cuneus 0.60 mm, distance apex cuneus—apex membrane 0.40 mm, length claval commissure 0.20 mm, length cuneus 0.52 mm, width cuneus 0.38 mm; hind femora swollen, 2nd antennal segment stout, slightly broader than segment 1 and appreciably thicker than 3 and 4, length antennal segments I 0.12 mm, II 0.66 mm, III 0.40 mm, IV 0.24 mm; length labial segments I 0.32 mm, II 0.38 mm, III 0.38 mm, IV 0.28 mm; left clasper with sub-basal swelling only slightly pronounced when viewed dorsally in position of repose (fig. 6), but projecting strongly to the right when viewed with blade projecting upward (fig. 7), with several scattered elongate hairs arising from the "outer surface", distal portion sharply but evenly curved, forming a broadly pointed apex; (right clasper not illustrated).

MATERIAL EXAMINED. Holotype: ♂ SOUTH AFRICA: *E. Cape Province*: Port St. Johns, Pondoland, 1–15 April 1924 (*R. E. Turner*); in British Museum (Natural History). Paratypes: 2♂ same data as holotype; 1♂ *idem*, 1–17 Mar. 1924; 4♂, 1 *idem*, 18–31 Mar. 1924; 1♂ *idem*, May 1924; in British Museum (Natural History), National Insect Collection, Pretoria, J. A. Slater and T. Schuh collections.

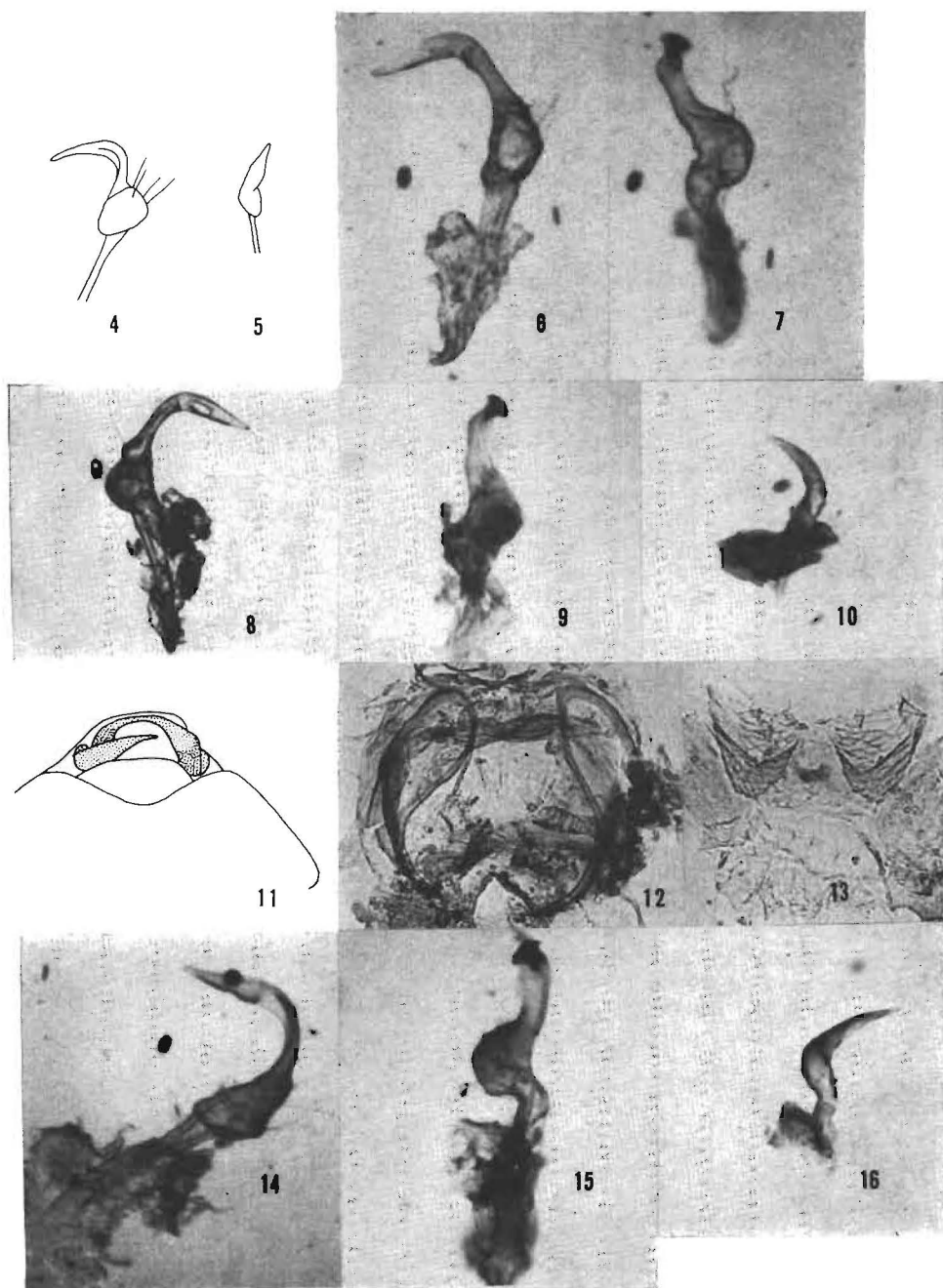
This species is named in honor of R. E. Turner, whose extensive collections in the British Museum (Natural History) have contributed greatly to our knowledge of the fauna of South Africa.

Turneri resembles *transvaalensis* in general habitus but is readily distinguishable by the covering of conspicuous hairs on the membrane of the fore wing, the longer more conspicuous hairs on the pronotum and corium, the more strongly explanate pronotal and corial margins, numerous differences in coloration, the impressed ventral (anterior) area of the head and the much narrower area of the head below the compound eyes.

The cuneal markings vary somewhat in the otherwise quite uniform type series. In some specimens the dark brown colour covers most of the cuneus, leaving only a large anteromesal macula transparent.

The pubescence on the membrane of the fore wing is unique among the species studied.

M. turneri resembles *ghanaiensis* Smith in general coloration and conformation. The antennae of *turneri* sometimes have a slight indication basally and subdistally of the infuscation present in *ghanaiensis*. The two species may, however, be readily separated by the characters given in the succeeding key.



***Magnocellus transvaalensis* spec. nov., figs 2, 8–13**

Small, ovate, total length 2.64 mm, (fig. 2), maximum width 1.56 mm; general coloration dark chocolate brown shading to black on basal area of scutellum and pronotum and distally on corium; dorsal surface with a sub-basal white transverse band comprising distal $\frac{1}{2}$ of scutellum (with exception of extreme apex), central $\frac{1}{3}$ or more of clavus and large sub-basal patch on corium that does not quite attain lateral margin; basal half of cuneus bearing a large white patch also not attaining lateral margin; head between and below eyes yellow with dark brown punctures and striae, strongly infuscated with brown laterally below eyes; antennal segments I and 3 and basal $\frac{3}{4}$ of 2 dark brown, distal $\frac{1}{4}$ of segment 2, all of 4 strongly contrasting white, extreme posterior area of head behind and below eyes white; legs and labium dark brown to black, trochanters, apices of hind femora and distal $\frac{1}{2}$ of tibiae white; dorsal surface punctate, clothed with prominent decumbent silvery hairs, pubescence of antennal segment 2 decumbent, that on 3 and 4 suberect, as long as or longer than diameter of segment.

Ocelli large and prominent, in contact with compound eye, distance between ocelli almost exactly twice width of an ocellus, eye emarginate on caudomesal angle behind ocellus, frons bearing a conspicuous transverse furrow, rugulose ventrally; antennae arising well forward of posterior angle of eye below; head laterally somewhat excavated below eye, length head 0.20 mm, width across eyes 0.62 mm, interocular space 0.16 mm, width ocellus 0.04 mm, interocellar width 0.08 mm; pronotum moderately convex, lateral margins arcuate and explanate, posterior margin sinuately concave, length pronotum 0.40 mm, width pronotum 1.26 mm; scutellum evenly convex, length scutellum 0.80 mm, width scutellum 0.76 mm; hemelytra with clavus strongly narrowing posteriorly, length claval commissure 0.20 mm, corium broadly arcuate laterally with a prominent explanate emboliar flange, distance apex clavus—apex cuneus 0.60 mm, distance apex cuneus—apex membrane 0.30 mm, length cuneus 0.44 mm, width cuneus 0.30 mm; 2nd antennal segment not broader than segment 1, terete and slender, somewhat broader than segments 3 and 4, length antennal segments I 0.10 mm, II 0.52 mm, III 0.34 mm, IV 0.22 mm; hind femora strongly enlarged; labium extending on to abdominal venter, length labial segments I 0.30 mm, II 0.36 mm, III 0.30 mm, IV 0.24 mm (3rd and 4th measured from paratype); left clasper viewed ventrally in position of repose (fig. 8) with sub-basal swelling prominent and evenly rounded on "outer surface" with a row of 4 evenly spaced elongate hairs, a single hair arising from a smaller swollen area just distad of sub-basal swelling, shaft evenly and sharply curved, terminating in an evenly tapered acute apex, sub-basal swelling projecting to right when viewed with blade of clasper pointing up (fig. 9), but not nearly so prominent as in *M. turneri*; right clasper viewed ventrally in position of repose (fig. 10) sickle shaped, evenly tapering to an acute apex.

The sclerotized rings of the bursa copulatrix (fig. 12, dorsal view) are very similar to those of the mirid subfamily Phylinae, being rather simple in nature and not

EXPLANATION OF FIGURES

Figs. 4–5. *Isometopidea miriformis* spec. nov. 4. Left clasper. 5. Right clasper. 6–7. *Magnocellus turneri* spec. nov. 6. Left clasper. 7. Left clasper, blade pointing up. 8–13. *M. transvaalensis* spec. nov. 8. Left clasper. 9. Left clasper, blade pointing up. 10. Right clasper. 11. Dorsal view of genital capsule showing claspers in repose. 12. Sclerotized rings, ♀. 13. Posterior wall and sclerites, ♀. 14–16. *Letaba umbrosa* spec. nov. 14. Left clasper. 15. Left clasper, blade pointing up. 16. Right clasper.

particularly contorted in the supporting membrane, broadest anteriorly and tapering posteriorly. Lying under the rings in the illustration are the remnants of the ovipositor valves to which the bursa copulatrix is attached. The sclerotized plates of the posterior wall (fig. 13) are illustrated from an anterior view.

MATERIAL EXAMINED. Holotype: ♀ SOUTH AFRICA: *Transvaal*: Rustenburg District, Bergheim Farm, 12 Nov. 1964 (*E. C. G. Bedford*); in National Insect Collection, Pretoria. Paratypes: 9 ♀, same data as holotype—1 ♂ *idem*, but 1 Feb., 1965; in National Insect Collection, Pretoria, J. A. Slater and T. Schuh collections.

The entire type series was taken along with nymphs on citrus that was heavily infested with *Chrysomphalus aonidum* L. upon which the isometopids were presumably feeding.

The single male specimen, although taken on a different date from the remainder of the type series, almost certainly represents the opposite sex of this species. It differs in having a much more robust second antennal segment and in having a translucent rather than opaque corium.

***Magnocellus albifrons* spec. nov.**

Small, ovate or obovate, total length 2.68 mm, maximum width 1.40 mm; pronotum, mesoscutum and scutellum dark chocolate brown, apical $\frac{1}{4}$ of last strongly contrasting white; vertex of head and area extending midway on to frons light brown, remainder of frons and extreme posterior edge of head laterally white, excavated area of head laterally below ventral margin of eye a strongly contrasting dark brown; first antennal segment dark brown, segment 2 white on proximal $\frac{2}{3}$, distal $\frac{1}{3}$ dark brown (segments 3 and 4 missing); legs and labium dark brown, distal $\frac{1}{2}$ to $\frac{2}{3}$ of tibiae white; corium translucent, chiefly pale hyaline, both clavus and corium mesad of embolium infuscated with dark brown basally, a large ovoid brown area on distal $\frac{1}{3}$ of corium mesad of embolium, cuneus with a very narrow brown vitta along inner margin; membrane completely hyaline, lacking pubescence; pronotum, mesoscutum and scutellum closely and distinctly punctate, punctures on corium large but sparse; clothed above with prominent semi-decumbent pale hairs; hairs on second antennal segment nearly erect with length less than diameter of segment.

Head excavated laterally below eyes, very slightly transversely impressed adjacent to ventral margin of frons, eyes widely separated mesally, attaining posterior margin of head dorsally but not laterally, ocelli very large, in contact with eyes, diameter of ocellus much greater than $\frac{1}{2}$ interocular space, length head 0.18 mm, width across eyes 0.66 mm, interocular space 0.17 mm, width ocellus 0.06 mm, interocellar space 0.04 mm; pronotum prominently convex, lateral margins weakly arcuate and distinctly but narrowly explanate, length pronotum 0.36 mm, width pronotum 1.18 mm; scutellum evenly convex, length scutellum 0.70 mm, width scutellum 0.70 mm; hemelytra with corium expanded well beyond lateral margins of abdomen with lateral margins nearly straight at most very feebly arcuate, strongly explanate, clavus strongly tapering posteriorly, distance apex clavus—apex cuneus 0.60 mm, distance apex cuneus—apex membrane 0.62 mm, length cuneus 0.40 mm, width cuneus 0.38 mm; membrane considerably exceeding apex of abdomen; 2nd antennal segment not strongly enlarged, uniformly cylindrical, about equal in diameter to segment 1, length antennal segments I 0.10 mm, II 0.56 mm, (III and IV missing); length labial segments I 0.30 mm, II 0.30 mm, III 0.30 mm, IV 0.38 mm; hind femora strongly enlarged.

MATERIAL EXAMINED. Holotype: ♂ CONGO: Kaswabilenga (700 m) 3-8. XI. 1947 (Mis. G. F. de Witte 929a); in Musee Royal de l'Afrique Centrale.

M. albifrons resembles *M. wacriensis* Smith from Ghana in the possession of a translucent fore wing. It differs in having a relatively much broader pronotum, 3.1:1 in *albifrons* as against 2.6:1 (width to median length) in *wacriensis*. Each ocellus is said to be slightly broader than the interocellar distance in *wacriensis* whereas in *albifrons* the reverse is true. In *wacriensis* the second antennal segment is black with the hairs as long as the diameter of the segment; in *albifrons* the second antennal segment is white with only the distal one-third black and the hairs are shorter than the diameter of the segment. The two species agree in having the frons lighter than the vertex and in most details of the corial and scutellar coloration.

From *turneri*, *albifrons* can readily be distinguished by the lack of fine pubescence on the membrane of the fore wing in the latter, the narrower hemelytron, less strongly arcuate and explanate pronotal margin, pale translucent central area of the corium, and white rather than dark brown frons, as well as the antennal coloration.

KEY TO THE SPECIES OF MAGNOCELLUS

- 1 Pronotum less than 3 times as wide as long (2.6:1); corium translucent . . . **wacriensis**
- 1a Pronotum more than 3 times as wide as long; corium either translucent or opaque . . . 2
- 2 Frons white . . . **albifrons**
- 2a Frons dark brown or yellow brown . . . 3
- 3 Hemelytra with a broad white band covering scutellum, clavus and corium; a large white macula present on basal $\frac{1}{2}$ of cuneus . . . **transvaalensis**
- 3a Clavus and corium nearly uniformly brown, lacking a broad conspicuous white fascia; cuneus lacking a large white basal macula . . . 4
- 4 Ocelli separated by less than width of an ocellus; fore and middle femora white; corium opaque; membrane apparently lacking pubescence . . . **ghanaiensis**
- 4a Ocelli separated by more than width of an ocellus; fore and middle femora dark chocolate brown; corium translucent; membrane possessing pubescence . . . **turneri**

Letaba umbrosa spec. nov., figs 14-16

Small, subquadrate, flattened, total length 2.92 mm, maximum width 1.74 mm; entire body surface black, shining, becoming somewhat dark brown laterally on the embolium; membrane uniformly smoky brown; posterior margin of head behind eyes and ocelli and laterally posterior to eyes a strongly contrasting ivory white, narrow, rimmed band; antennal segment 1 dark brown, segment 2 pale testaceous to distal $\frac{1}{4}$, then strongly contrasting dark brown to black, segments 3 and 4 uniformly dark brown to black; legs nearly uniformly dark brown, trochanters paler; dorsal surface conspicuously and deeply rugosely punctate, punctures on pronotum more closely set than those of corium; entire dorsal surface excluding membrane clothed with very elongate decumbent to semi-erect sericeous testaceous hairs, these very prominent and forming a definite conspicuous vestiture over entire surface; antennal segment 2 with very elongate erect hairs, length of each hair being noticeably greater than diameter of segment.

Head very much flattened against anterior surface of pronotum, width of head across eyes approximately seven times that of head length viewed dorsally, ocelli moderately large, much larger than in *bedfordi*, but separated mesally by considerably more than twice width of an ocellus (diameter of ocellus $\frac{1}{4}$ interocular distance), ocelli in contact with eye, genal area extending only a short distance below ventral extension of eye, frons produced carinately so as to obscure antennal insertion and forming a sinuate

margin when viewed frontally, antennae inserted very far mesad, almost mesal to inner margin of eye, frons very coarsely and rugosely punctate, a deep transverse furrow across frons somewhat dorsal of ventral eye extension, ocelli produced above eye dorsally when viewed frontally, median length head 0.12 mm, width across eyes 0.80 mm, interocular space 0.26 mm, width ocellus 0.07 mm, interocellar space 0.12 mm; pronotum moderately and evenly convex, lateral margins strongly arcuate and narrowly explanate, length pronotum 0.54 mm, width pronotum 1.50 mm; scutellum strongly swollen on basal portion, length scutellum 0.84 mm, width scutellum 0.96 mm; hemelytra with clavus strongly tapering posteriorly and strongly inclined ventrally to contrast with relatively flat surface of corium, lateral margins of corium strongly explanate, embolium greatly enlarged posteriorly and very broad, membrane considerably exceeding apex of abdomen, cuneal fracture distinct, deep, incisure oblique as in *bedfordi* and *cuneata*, membrane covered with very fine inconspicuous but distinct pubescence, distance apex clavus—apex cuneus 0.70 mm, distance apex cuneus—apex membrane 0.32 mm, length cuneus 0.60 mm, width cuneus 0.36 mm; second antennal segment prominently enlarged, straight, as broad or broader than segment 1, and much larger than segments 3 and 4, length antennal segments I 0.10 mm, II 0.64 mm, III 0.18 mm, IV 0.12 mm; length labial segments I 0.26 mm, II 0.32 mm, III 0.22 mm, IV 0.40 mm; left clasper viewed dorsally in position of repose (fig. 14) with sub-basal swelling irregular, more prominent on "outer surface" where three groups of paired elongate hairs arise, shaft twisted distally, evenly and sharply curved into an acute apex, sub-basal swelling prominent, projecting to left when clasper is viewed with blade pointing up (fig. 15) (see fig. 7 and 9); right clasper slightly swollen sub-basally, curving rather sharply into an elongate pointed apex.

MATERIAL EXAMINED. Holotype: ♂ SOUTH AFRICA: *Transvaal*: Pienaars-rivier Dam, 15 mi. NE Pretoria, 2 Nov., 1967 (J. A. & S. Slater, T. Schuh); in National Insect Collection, Pretoria.

This species was beaten from *Acacia karoo* Hayne growing in open bush veld adjacent to the Pienaars River Dam. The very much flattened head as well as the strongly convex dorsal surface relates the species to *Letaba bedfordi* and *L. cuneata* but it is actually not closely related to either of these as can be noted by the great difference in development of the gena and the angle of junction between the embolium and cuneus, as well as the presence of pubescent hairs on the membrane in the present species. *L. umbrosa* is the only South African isometopid that we have seen that possesses a completely black body surface. This dark coloration would relate it to *Letaba nitida* Smith described from Ghana. In *nitida* the second antennal segment is light brown proximally and darker distally which also relates it to *umbrosa*, although one would scarcely call the proximal area of the antennae light brown in the present species. Furthermore, in *nitida* the scutellum is black with a white apex (which is not true of *umbrosa*) and is said to have the scutellum more coarsely punctate than the pronotum and mesoscutum, whereas in *umbrosa* the reverse is true. The most obvious difference between the two species would of course be that *nitida* has the fore wing "membranous and colourless" in contrast to the uniformly black clavus and corium in the present species. Furthermore in *nitida* the eyes are said to extend upward above the ocelli in contrast to *umbrosa* where the reverse is true.

There is a rather badly mutilated specimen in the British Museum (Natural History) that we believe also pertains to the present species, but we have not included it in the type series because of its poor condition. This specimen is from Eastern Cape Province, Queenstown, 16.1–10.2, 1923 (R. E. Turner).

Letaba cuneata spec. nov.

Small, broadly ovate, flattened, total length 2.88 mm, maximum width 1.90 mm; general coloration dark chocolate brown; dorsal surface strongly shining; apical $\frac{1}{3}$ of scutellum, a large quadrate patch on corium covering basal $\frac{1}{2}$, excluding extreme base and embolium and reaching broadly along claval suture testaceous, basal $\frac{2}{3}$ of cuneus except extreme lateral margin white; head dorsally and laterally below eyes light testaceous, frons a strongly contrasting dark brown but irregularly suffused with testaceous; first antennal segment dark brown, segment 2 pale testaceous on proximal $\frac{2}{3}$, distal $\frac{1}{3}$ with a dark brown annulus not attaining apex, segments 3 and 4 uniformly dark brown; legs dark chocolate brown, tibiae paler on distal $\frac{1}{3}$; dorsal surface conspicuously and coarsely punctate; clothed above with prominent moderately elongate decumbent silvery hairs, hairs on second antennal segment only semi-decumbent, length not exceeding diameter of segment.

Head very strongly flattened against pronotum, width across eyes nearly seven times dorsal length of head, eyes very widely separated mesally, gena and frons swollen with a deep transverse punctate groove at level of ventral margin of eyes, extending between eyes, frons below ocelli somewhat impressed, ocelli moderately large, widely separated from one another, in contact laterally with compound eye, median length head 0.60 mm, (frontal view), width across eyes 0.82 mm, interocular space 0.24 mm, width ocellus 0.04 mm, interocellar space 0.14 mm; pronotum very strongly convex, sloping off greatly laterad, lateral margins strongly arcuate, very narrowly explanate, anteriorly reaching anterolateral margins of head, posterior margin deeply bisinuate, length pronotum 0.46 mm, width pronotum 1.48 mm; scutellum strongly swollen, particularly on basal $\frac{1}{2}$, length scutellum 0.94 mm, width scutellum 1.00 mm; hemelytra with clavus strongly narrowing posteriorly, corium convex and sloping laterally, lateral margins very strongly and broadly arcuate and explanate, forming a distinct broadly open angle with cuneus, the latter elongate, membrane considerably exceeding and curving downward over apex of abdomen, distance apex clavus—apex cuneus 0.74 mm, distance apex cuneus—apex membrane 0.30 mm, length cuneus 0.50 mm, width cuneus 0.36 mm; antennae with segment 2 about as broad as segment 1, not greatly swollen but considerably larger and more elongate than segments 3 and 4, length antennal segments I about 0.10 mm, II 0.58 mm, III 0.22 mm, IV 0.16 mm; length labial segments I 0.34 mm, II 0.38 mm, III 0.24 mm, IV 0.40 mm; hind femora strongly swollen.

MATERIAL EXAMINED. Holotype: ♀ SOUTH AFRICA: Eastern Cape Province, Aliwal North, Dec. 1922 (R. E. Turner); in British Museum (Natural History).

This species agrees with *Letaba bedfordi* in having the gena and frons deeply produced ventrad of the eyes, in possessing a transverse furrow across the frons at the level of the ventral margin of the eye, and in having the body very strongly arcuate laterally and strongly convex dorsally, with the embolium forming a distinct open angle with the elongate cuneus, as well as the very flattened head as much as seven times broader across the vertex than the length. There are, however, numerous differences between the two species. *L. cuneata* is actually less convex and sloping from the scutellum to the lateral margins of the corium than is *bedfordi*. It possesses a testaceous rather than black frons and vertex. The hairs on the pronotum and corium are quite distinct and well developed in *cuneata* whereas in *bedfordi* the surface appears nearly glabrous, the hairs being extremely tiny and obsolete except slightly more evident laterally along the

embolium. Furthermore in *bedfordi* the distal half of the scutellum is bright red; in *cuneata* only the distal third of the scutellum is pale, and in this case testaceous to white, never reddish. Furthermore, *bedfordi* lacks the pale markings on the corium and the cuneus present in *cuneata*. The ocelli are also somewhat larger in *cuneata* than they are in *bedfordi*. This species shows some relationship to *umbrosa* but differs in a number of important characteristics, particularly the degree of projection of the gena below the eye which is very wide in this species and in *bedfordi*, but barely extends below the eye surface in *umbrosa*. Moreover, the hairs on the second antennal segment of *umbrosa* are very elongate and upstanding, much longer than the diameter of the segment, in contrast to both *cuneata* and *bedfordi*. Furthermore, *umbrosa* does not have such strongly curving convex corial surfaces, and the angle formed at the cuneal fracture is nearly straight rather than forming a large open angle as in *cuneata* and *bedfordi*. It seems evident, therefore, that this species is most closely related to *Letaba bedfordi*, but differs as indicated above.

Letaba bedfordi Hesse

Letaba bedfordi Hesse, 1947, J. ent. Soc. sth. Afr. 10: 35.

We have examined the holotype and a paratype of this species which was described from Letaba in the northern Transvaal. In addition we have examined a single ♀ from Nelspruit, Transvaal, December, 1967 (P. C. Wentzel).

KEY TO SPECIES OF *LETABA*

- | | | |
|----|---|-----------------|
| 1 | Fore wing appearing membranous and colourless; scutellum more coarsely punctate than pronotum and mesoscutum (Ghana) | nitida |
| 1a | Fore wing coriaceous, opaque or nearly opaque black or brown; scutellum less coarsely punctate than pronotum and mesoscutum, or with punctures on these areas of equal size | 2 |
| 2 | Cuneus largely white or light testaceous | cuneata |
| 2a | Cuneus completely black | 3 |
| 3 | Scutellum completely black; dorsum clothed with prominent conspicuous hairs | umbrosa |
| 3a | Scutellum black basally with distal $\frac{1}{2}$ to $\frac{3}{4}$ a strongly contrasting bright red; dorsum sparsely clothed over most of surface with very short, obsolete, inconspicuous hairs | bedfordi |

Myiomma capeneri spec. nov., fig. 3

Small, elongate ovate, total length 2.60 mm, (fig. 3) maximum width 1.10 mm; head black anteriorly, becoming pale testaceous on extreme posterior area of vertex and laterally behind eyes; pronotum largely black, marked with a yellow posteriorly tapered triangular spot mesally at anterior margin and a pair of narrow crescent shaped spots along posterior margin on either side of midline; mesoscutum black with a narrow red-brown stripe along caudolateral margin; scutellum with basal half black distal half a strongly contrasting shining white; hemelytra chiefly dark chocolate brown, a prominent longitudinal white dash present centrally on corium, lying medially along radial vein, cuneus with basal half white, narrowing laterad, distal half black; membrane dusky gray-brown, lighter distally; coxae, trochanters, proximal half of femora and apical half of tibiae white, basal area of fore coxae, distal half of femora, basal half of tibiae, all tarsi, labium and antennal segments dark brown to black; dorsal surface distinctly punctate; body clothed with conspicuous moderately elongate decumbent hairs, antennae with decumbent hairs only, a short row of stiff bristles present at postero-lateral margins of eyes.

Head with frons convex below eyes, eyes closely approximated mesally in anterior view, but not in contact, excavated laterally below eye, antennae arising below posterior angle of eye, latter not reaching posterior margin of head, minimum dorsal length head, 0.22 mm, width across eyes 0.44 mm, minimum interocular distance 0.02 mm; (all head measurements in frontal view where applicable); pronotum moderately convex, lateral margins straight, carinate, posterior margin sinuately concave, length pronotum 0.36 mm, width pronotum 0.98 mm; length scutellum 0.40 mm, width scutellum 0.54 mm; corium nearly straight, very slightly convex along lateral margin, distance apex clavus—apex cuneus 0.60 mm, distance apex cuneus—apex membrane 0.38 mm, length cuneus 0.42 mm, width cuneus 0.34 mm; hind femora moderately swollen; second antennal segment not broader than segment 1, slightly curving, segments 3 and 4 slender, length antennal segments I 0.10 mm, II 0.58 mm, III 0.18 mm, IV 0.18 mm; length labial segments I 0.30 mm, II 0.34 mm, III 0.32 mm, IV 0.40 mm.

MATERIAL EXAMINED. Holotype: ♀ SOUTH AFRICA: Orange Free State: Golden Gate, Jan. 1964 (*A. L. Capener*); in National Insect Collection, Pretoria. Paratype: ♀, same data as holotype; in J. A. Slater collection.

M. capeneri is closely related to *M. milleri* (Hoberlandt) to which species it keys in Smith (1967) and Hoberlandt (1959), and with which it agrees in most structural details and in the possession of a white distal half to the scutellum and a large white macula covering the basal half of the cuneus. The dorsal pubescence, particularly on the corium, is considerably less elongate than in *milleri*. The embolar area of the corium much broader in *milleri*. There are numerous differences in colour, *milleri* having the second antennal segment pale with only the distal $\frac{1}{6}$ to $\frac{1}{2}$ dark, the dorsal half of the corium largely pale testaceous as is the clavus, the lateral mesoscutal lobes entirely ochraceous, the pronotum posteriorly with a pale mesal stripe which widens anteriorly to form a large quadrate orangish area, and the entire posterior fourth of the pronotum pale testaceous in contrast to the nearly uniformly chocolate brown coloration of *capeneri* except as noted above.

We take pleasure in dedicating this species to Mr A. L. Capener of the National Collection of Insects, Pretoria, in recognition of his extensive contribution to the advancement of entomology in South Africa.

Myiomma milleri (Hoberlandt)

Paramyiomma milleri Hoberlandt, 1959, Acta Ent. Mus. Nat. Pragae 33: 389.

Myiomma milleri Smith, 1967, Bull. Ent. Soc. Nigeria 1: 41.

Hoberlandt (1959) in his original description states that "eyes in frons nearly touching each other," but in the accompanying key says that they are contiguous. The eyes do not come in contact with each other in any of the specimens we have studied, although they do approach one another very closely on the frons.

MATERIAL EXAMINED. SOUTH AFRICA: Transvaal: 2♀ Pretoria, Jan. 1934 (*H. K. Munro*)—3♀ Pretoria, Meintjies Kop, March 19, 1968 (*J. A. & S. Slater, T. Schuh*)—4♀ Claudiusshoop, 11 mi. N. Dendron, 15.12.1965 (*M. Johannsmeier*); in National Collection of Insects, Pretoria, British Museum (Natural History). J. A. Slater and T. Schuh collections.

The Meintjies Kop, Pretoria, specimens were beaten from ornamental specimen trees of *Widdringtonia cupressoides* Endl. growing immediately to the west of the Union Buildings.

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